REMARKS

Applicants have carefully reviewed the Office Action dated June 16, 2006. Applicants have amended Claims 1, 16, 21, 22, 25 and 30 to more clearly point out the present inventive concept. Reconsideration and favorable action is respectfully requested.

Claim 16-25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by *Bacon*, U.S. Patent No. 6,307,538.

Applicants have amended the current claims to clarify some of the language. In Claims 1 and 16, the independent claims, the amendments are directed toward clarifying that the single chip processor as operable to provide bidirectional communications in both directions, on one side in one serial data format and, on the other side, in another serial data format. Therefore, all of the processing is done inside of the single chip processor such that a serial data signal received in the one serial data format can be received, converted to the native digital format of the operating system of the processor for processing thereof and then interfaced on the other side of the processor through another port with the other serial data format such that a byte of data, for example, can be transmitted from one side of the module in the one serial data format to the other side of the module in the other serial data format and data can be processed in the opposite direction between the two serial data formats.

With respect to the *Bacon* reference, the Examiner has stated in paragraph 2 that the microcontroller core (102) operates in accordance with the first serial data protocol from and to an external device for transmitting and receiving serial data that transmits/receives data and also provides power to the modularized serial data module. The Examiner has referred to Fig. 3 and also, column 5, lines 6-12 to support this rejection. The contents of *Bacon* at column 5, line 6-12 are set forth as follows:

> Serial interface engine 104 is used in the embodiments of the present invention where the connection between the computer and the peripheral device is made across a serial line. In such embodiments, the information produced by microcontroller core 102 is passed through serial interface engine 104, which converts the parallel digital information of microcontroller core 102 into serial digital information.

This description at column 5, lines 6-2 discloses only that data is converted from the parallel data format of the core (102) to serial digital information and not the reverse. Applicants note that the *Bacon* system is a system for detecting the state of a transducer in the transducer device. The transducer output is first converted from an analog value to a digital value and then passed to an isolator (92). The specification at column 4, beginning at line 55, states that the "transducer integrated circuit 86 sends digital values representative of the transducer signals along to conductors 88 and 90 found within cable 74." This system is a single or uni directional system, i.e., it only transmits data in one direction from the transducer to the processor and then out the USB connector. With reference to Fig. 3 specifically, the operation is such that the interface IC (86) transmits data on basically a ground line and a data line through an isolator (92). This is evidenced by examining Fig. 6 wherein there is basically an optical diode such that a logic high signal will turn on the diode, and a logic low will result in no output. (Note that, as indicated at column 4, line 64, the isolatoris optional.) This isolator (92) merely provides a differential voltage between lines 98 and 100. This is nothing more than a simple data input where one of data line 98 or 100 is connected to ground. This is the digital input to the core 102 and it is questionable whether this is a data protocol. However, it certainly is serial data, as it is only a single port and all that is required is for the processor to sample this input. There is no protocol associated with it.

The data received from the isolator (92) is processed by the core 102 and then transmitted out of the USB connector in a serial data format in accordance with USB serial protocol. Therefore, on the right side of the connector housing, there certainly is a serial data protocol. However, there is no disclosure that data can be received from the USB connector nor is there any disclosure that data can be transmitted from the core (102) through the isolator (92) to the device housing (76) via the IC (86). As such, the Examiner is incorrect in finding support that this system operates in accordance with a first serial data protocol *from and to* an external device for *transmitting and receiving* the serial data that *transmits/receives data* and also provides power to the modularized serial data module. The reference to column 5, line 6-12 is nothing more than the fact that this is a serial data interface with a serial interface engine for interfacing with that serial protocol to transfer data from the core to the connector. The Examiner also states on page 3 of the Office Action, in the same paragraph, that the processor is operable to provide processing of information based upon data received from either the first serial data communication interface through said connector housing or the second serial data communication interface through said data interface, or processing

information for transmission to either the serial data communication interface through said connector housing or the second serial data communication interface through said data interface. The Examiner again refers to Fig. 3 and also column 5, lines 6-12. However, column 5, lines 6-12 deals only with the serial interface engine (104). There is no disclosure as to how data can be transmitted to and from the device housing (76). Thus, Applicants believe that the Examiner has failed to show that *Bacon* discloses the limitations of the Claim 16, as Claim 16 clearly requires that there be a bidirectional communication provided on either side and that this bidirectional communication be in a serial data protocol on each side that is different than the native processor data protocol.

In view of the above, Applicants respectfully request withdrawal of the 35 U.S.C. § 102 rejection with respect to Claim 16.

With respect to Claims 17-19, the Examiner has indicated that *Bacon* teaches that the data interface could comprise an analog interface, specifically referring to column 4, lines 30-33. This portion of the specification states that the transducers (80), (82) and (84) provide analog electrical signals to a transistor integrated circuit (86). However, the data interface is on the connector housing side and the Examiner has referred to the data interface as being the isolator (92). Clearly, Fig. 6 discloses a detail of the isolator (92), which merely shows that the isolator circuit (92) provides isolation for electrostatic interference. However, the specification at column 4, line 56, clearly indicates that the signals that are transmitted from the transducer (86) are digital signals. Therefore, even though the transducers may input analog signals, the question is where the data interface occurs; does it occur at the input to the integrated circuit (86), at the input of the isolator (92) or at the input of the microcontroller (96)? The Examiner indicates on one hand that the data interface is an element that correlates to the transducer (92) and, on the other hand, seems to indicate that this is an analog interface. Applicants believe that this is not the case and that the claims are interpreted as relating to the interface to the microcontroller, as that is the serial data protocol that is being discussed. Clearly, the output of the transducers (80) - (84) does not constitute a serial data protocol, as this is an analog signal that does not represent a digital value but, rather, represents an analog value. Claim 17 is merely directed to the fact that the data interface utilizes an analog interface to transmit data as opposed to analog values. Therefore, *Bacon* clearly does not teach the concept of the data interface comprising an analog interface. As such, with respect to Claims 17-19, Applicants respectfully request withdrawal of the 35 U.S.C. § 102 rejection with respect to Claims 17-19.

With respect to Claims 20-22, the Examiner indicates that *Bacon* teaches that the data interface comprises a digital data interface. This is in direct contravention with the Examiner's indication that the data interface comprises an analog interface. Applicants believe that the data interface can be a digital interface and the input to a microprocessor certainly would be a digital input, as the microprocessor operates in the digital domain as opposed to the analog domain. However, Claim 17 just indicates that, although data is being transmitted, it must first be processed through the serial data protocol interface to convert the digital information that is transmitted in analog format to digital information that can be recognized by the microprocessor. With respect to *Bacon*, the information that is input on the terminals 88 and 90 and is translated to the terminals 98 and 100 appears to be in the native digital domain of the microcontroller (96).

With respect to Claim 25, the Examiner indicates that *Bacon* teaches that the processor utilizes a free running time base generator within the connector housing. The Examiner refers to column 6, lines 22-31 for this support. This portion of the specification of *Bacon* is set forth as follows:

> The synchronization of the multiplex switching can be achieved in a number of ways. In one embodiment, the electronics in device housing 76 and connector 72 have predefined time periods for providing power to the housing and for transferring data to or from the housing. These time periods have tolerances to accommodate clock circuit discrepancies. Each set of electronics synchronizes on the start and/or end of each data packet. When needed, null data packets are sent to maintain synchronization.

It can be seen that this portion of the specification refers to Fig. 4. In Fig. 4, there is provided an operation wherein two multiplexers are provided on respective ends of the isolator to allow for power to be transmitted across the isolator (92) from a power source or a data. Of course, there is very little description as to how power can be transmitted across an optical data interface. In any event, there is timing provided of some sort that, at the end of the data packet, the multiplexer can be switched such that power can be transferred to the storage capacitors on the transducer IC. There is no discussion that there are any clock circuits that are disposed in conjunction with or are part of the microprocessor that in any way allow the microprocessor to operate in accordance therewith such that the time base for the microprocessor is derived from that clock. Rather, in the specification, at column 6, line 32, it is indicated that the actual control of the multiplexers can be disposed within the

transducer IC. As such, it is highly unlikely that such would be utilized for the processor, as the communication link is indicated as being in a very low frequency.

In view of the above, Applicants respectfully request withdrawal of the 35 U.S.C. § 102 rejection with respect to Claim 25 and, further, with respect to all of Claims 16 - 25.

Claims 1-15 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Bacon* in view of *Ware et al.* and further in view of *Nolan et al.* This rejection is respectfully traversed with respect to the amended claims.

Claim 1 is directed toward the concept wherein the processor interfaces between the serial data communication interface, which is supported by the USB interface in the specification, to an external device. This external device operates in accordance with the first serial data protocol. The processor has been clarified as operating with a free running oscillator such that there are required no external reactive components with the integral oscillator. This essentially means that this is not a crystal oscillator. Further, the processor operates in a native digital protocol of the processor wherein the first serial data protocol is different than the native digital protocol.

With respect to *Bacon*, as described above, *Bacon* provides an interface that utilizes a series of digital values, i.e., it pulls a line (98) high and low with respect to line (100). Thus, this is a digital value that operates in accordance with the native digital operating system of a microcontroller, i.e., this is basically a single bit digital input. The microcontroller basically looks at or samples this input and decides whether it is a logic "1" or a logic "0." This is the serial input to the microcontroller, which is in its native digital protocol. There is no discussion as to how the interface between the line (98) and (100) is handled and, as such, one cannot say that it is any different than the native digital protocol. Further, there is no discussion in *Bacon* as to there being any oscillator that is integral with the processor nor is there any suggestion that such would be the case, especially one that is free running and requires no external components. All that is mentioned is that the protocol associated with the serial interface engine (104) is that it can be a USB interface. There is an indication that the serial port interface (46), column 3, line 47, can utilize a USB connector. However, as indicated in Fig. 1, there is provided an interface to a modem, a keyboard, a microphone and a speaker and also to the mouse. The disclosure of Fig. 2 discloses the mouse

interface that utilizes a USB connector. Thus, one has to look at the specification with respect to Fig. 3 where it is indicated that the data communication is a USB interface.

The Examiner has indicated that *Bacon* supports the single chip processor being operable to process information *received* from the serial data communication interface with the first serial data protocol. The Claim 1 clearly states that the first serial data protocol is associated with the external device and not with the serial data communication interface. Thus, *Bacon* does not support this portion of the claim.

The Examiner indicates that *Bacon* does not expressly teach the oscillator disposed within the processor housing. The Examiner relies upon *Ware* for this teaching. The Examiner refers to Fig. 5 and the oscillator 565 of *Ware*. However, this particular oscillator in *Ware* is an oscillator that provides a refresh signal. There is no indication that this oscillator (565) operates in conjunction with the processor. Just because an oscillator is shown that operates in conjunction with a processor does not teach one or motivate one to utilize such an oscillator in conjunction with the operation of the device in Applicants present claimed invention. This invention utilizes a free running oscillator that requires no external components, i.e., no crystal, for the operation thereof to interface between a serial data interface and an external device that operates with the first serial data protocol. The Examiner indicates that, since *Ware* provides control of frequency or refresh signal, this would lead one skilled in the art to combine it with *Bacon*. However, *Ware* does not show the free running oscillator as being utilized for the operation of the processor. In fact, processors seldom operate with free running oscillators. They typically require crystal control oscillators for a number of different reasons.

The Examiner has further indicated that the "modified of *Bacon*" discloses all of the limitations except whether the oscillator is disposed on a processor chip as a free running oscillator. Applicants assumes that the "modified" terminology refers to the combination of *Bacon* and *Ware*. The Examiner has utilized the *Nolan* reference to show the disclosure of a microcontroller that includes a watchdog timer that is utilized as a free running on-chip RC oscillator that does not require any external components. However, this watchdog timer is not utilized for the operation of the processor but, rather, it is utilized as a separate low frequency timer for other operations. The oscillator that is used for a watchdog timer cannot provide a time base for the processor as the time

base provided thereby is not inherently stable. As such, the combination of *Ware* and/or *Nolan* with *Bacon* does not cure the deficiencies noted herein above with respect to the use of a free running oscillator that requires no external components and that is integral with the processor and provides the time base therefore. As such, Applicants believe that the combination of *Ware*, *Nolan* and *Bacon*, taken singularly or in combination, does not anticipate or obviate Applicants present inventive concept, as defined by the amended claims.

With respect to the rejection of Claim 2, the Examiner indicated that *Bacon* teaches a data interface between the processor housing and external to the processor housing for transmission of data from the processor exterior to the processor housing or receipt of data generated exterior to the processor housing. Applicants notes that there is no disclosure in *Bacon* that data can be transmitted to any external device; rather, the whole disclosure of bacon is directed toward the receipt of data. Also, Applicants are not sure of exactly what component the Examiner is referring to with respect to the data interface being external to the processor housing.

With respect to Claims 3-5, the Examiner has indicated that *Bacon* teaches that the data interface comprises an analog interface. This was described herein above with respect to the rejection under the dependent claims of Claim 16 and this discussion is incorporated herein.

With respect to Claim 9, the arguments with respect to Claim 9 are those discussed herein above with respect to Claim 2 in that there is no ability in *Bacon* to transmit data to an external device.

With respect to Claim 10, the Examiner has referred to Fig. 3, and the disclosed transducers, for supporting the Examiner's contention that *Bacon* teaches subsequent transmission to the serial data line through the connector housing. The transducers are strictly sensors and they only sense information. There is no information transmitted to the external device or transducers.

With respect to Claim 12, *Bacon* indicates that it is possible to transmit power to the external device. Applicants believe that *Bacon* fails to disclose a circuit that would achieve a connection of power. The isolator of Fig. 6 illustrates two optically connected diodes. The question is how do these diodes operate to facilitate transfer of power thereacross to charge capacitors? There is no disclosure as to how a signal could be transmitted across these two diodes and charge a capacitor or

a battery. As such, Applicants believe there is insufficient teaching to teach one skilled in the art that power could be provided to the external device through the housing.

With respect to Claim 14, the Examiner is indicating that the first serial data protocol is associated with a universal serial bus data protocol. There is no reason that this could not be the case, but the first serial data protocol is that associated with the external device and not the serial data interface. As such, there is no disclosure that the external device which operates through the isolator (92) in *Bacon* would in any way support such a rejection.

In view of the above, Applicants respectfully request withdrawal of the 35 U.S.C. § 103 rejection with respect to Claims 1-15 and 30.

Applicants have now made an earnest attempt in order to place this case in condition for allowance. For the reasons stated above, Applicants respectfully request full allowance of the claims as amended. Please charge any additional fees or deficiencies in fees or credit any overpayment to Deposit Account No. 20-0780/CYGL-26,370 of HOWISON & ARNOTT, L.L.P.

Respectfully submitted,
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